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MAILED
MAY 5 1998

May 4, 1998

Mr. Robert Butler
VT Department of Environmental Conservation
Waste Management Division
103 South Main St./ West Bldg.
Waterbury, VT 05671-0404

RE: Subsurface Investigation, Middlebury Exxon, Middlebury, VT (VTDEC #97-2223)

Dear Mr. Butler:

Enclosed please find the April 1998 *Report on the Site Investigation of Suspected Subsurface Petroleum Contamination* for the Middlebury Exxon site in Middlebury, Vermont. Mr. Frank Trombetta requested that we forward a copy to you. Please do not hesitate to call if you have any questions or comments.

Sincerely,

Timothy J. Kelly, PG
Geologist

Encl.

cc: Frank Trombetta (w/o encl.)
GI #119741156

**REPORT ON THE
SITE INVESTIGATION
OF SUSPECTED SUBSURFACE
PETROLEUM CONTAMINATION**

AT

**MIDDLEBURY EXXON
Route 7, Middlebury, Vermont**

VTDEC Site #96-1961
Griffin Proj. #119741156

April 1998

Prepared For:

Frank Trombetta
Midway Oil
PO Box 8
Rutland, VT 05701

Prepared by



P.O. Box 943/ 19 Commerce St.
Williston, Vermont 05495
(802) 865-4288

MAY 5 10 15 AM '98

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I. INTRODUCTION

This report provides a summary of the tasks completed for the site investigation of suspected subsurface petroleum contamination at the former Middlebury Exxon station on Route 7 / Court Street, in Middlebury, Vermont (see Site Location Map in Appendix A). Results of the following investigative tasks performed by Griffin International, Inc., (Griffin) are presented:

- ◇ monitoring well installation;
- ◇ site survey;
- ◇ discussion of groundwater flow direction and gradient;
- ◇ groundwater sampling and analyses;
- ◇ sensitive receptor survey.

This work is being performed based on requests from Mr. Chuck Schwer of the Vermont Department of Environmental Conservation (VTDEC) in a letter to Mr. Frank Trombetta of Midway Oil Company, dated October 28, 1997. Work was performed in accordance with the November 12, 1997, *Work Plan and Cost Estimate for Subsurface Investigation of Suspected Petroleum Contamination*, prepared by Griffin and approved by Mr. Frank Trombetta of Midway Oil Company. Mr. Robert Butler of the VTDEC approved the work plan in a letter dated December 30, 1997.

II. SITE BACKGROUND

The Middlebury Exxon is located on the west side of Route 7 in Middlebury, Vermont (see Site Location Map in Appendix A). Topography at the site is generally flat. The property is bounded to the south, west, and north by residential and/or commercial properties and on the east by Route 7, across which are several commercial properties. The Otter Creek flows north approximately 500 feet west of the property.

No supply well exists on the former Middlebury Exxon property. The area is serviced by municipal water and sanitary sewer systems. The site is underlain by lake bottom sediments consisting of silt, silty clay, and clay according to the *Surficial Geologic Map of Vermont* (Ref. 1). The bedrock underlying the site is mapped as the Weybridge member of the Chipman Formation, which consists of gray limestone with interbeds of sandy limestone, according to the *Centennial Geologic Map of Vermont* (Ref. 2). No bedrock exposures were observed on the Middlebury Exxon property or immediately adjacent properties.

On July 22 and 23, 1997, a piping replacement inspection and underground storage tank (UST) closure inspection were performed at the site. The piping that was replaced transmitted gasoline from three existing USTs to on-site dispensers. A UST closure report, dated July 25, 1997, was forwarded to the VTDEC UST Program. The galvanized steel piping was reported to be in poor

condition at the time of replacement. Elevated concentrations of volatile organic compounds (VOCs), ranging from 0.5 to 200 parts per million (ppm), were detected in the vicinity of the piping with an HNuTM Model HW-101 portable photoionization detector (PID) in soils collected from depths of 2.5 to 3 feet below grade. The UST removed was a 550-gallon, single-walled, steel, heating oil UST. Elevated concentrations of VOCs, ranging from 1 to 21 ppm, were detected in the vicinity of the UST with the PID in soils collected from depths of 2 to 5 feet below grade. Use of this UST was discontinued at an unspecified time before the UST removal. The suspected sources of petroleum contamination at the site are leakage from the gasoline piping. Approximately 6 cubic yards of petroleum contaminated soils from the vicinity of the gasoline piping, identified during the gasoline piping replacement inspection, were stockpiled on-site at the completion of the piping replacement and UST Closure activities. These soils were removed because they consisted of clay, cobbles, and boulders that were inappropriate backfill material for the new piping. Therefore, these soils were removed to the extent necessary to accommodate the piping and backfill, and the full extent of soil contamination was not removed.

III. INVESTIGATIVE PROCEDURES

To further define the extent of subsurface petroleum contamination in the area of former Middlebury Exxon, the following additional investigative tasks were undertaken as per the November 12, 1997, Work Plan: installation of one monitoring well; site survey of the newly installed monitoring well and five existing monitoring wells; discussion of groundwater flow direction and gradient; groundwater sampling from the six wells, analyses of groundwater samples for petroleum-related constituents; and an evaluation of sensitive receptors.

A. Monitoring Well Installation

On February 12, 1998, one shallow monitoring well (MW6) was installed at the site (see Site Map in Appendix A). MW6 was installed on the west side of the property in a potential downgradient direction from the former 550-gallon fuel oil UST pit. According to Matt Pollock of Midway Oil Company, the other wells (MW1 through MW5) were previously installed by Green Mountain Boring of East Montpelier, VT, for leak detection monitoring for the existing gasoline UST and piping/distribution systems.

The borehole for MW6 was installed utilizing the hollow stem auger drilling method. T&K Drilling of Troy, New Hampshire, installed the well under the direct supervision of a Griffin geologist. During borehole advancement, soil samples were collected every five feet. Soils were screened for volatile organic compounds (VOCs) using an HNuTM Model PI-101 PID using the Griffin Jar/Polyethylene Bag Headspace Screening Protocol, which conforms to state and industry standards. Soil characteristics and headspace concentrations were recorded by the geologist in a detailed well log which is included in Appendix B.

The borehole for MW6 was completed to a depth of approximately 17 feet below grade. Groundwater was encountered at approximately 11 feet below grade. The soils encountered below the asphalt in the borehole consisted generally of grayish-brown clay from 0.25 foot to 17 feet below grade. The well was completed with a 10-foot screened interval from 5 to 15 feet below grade. The VOCs detected in the headspace of soil samples collected from this borehole ranged in concentration from 0 to 0.2 ppm. No petroleum odors or stains were observed in the soil samples collected from this borehole.

The MW6 monitoring well log is included in Appendix B. MW6 was completed with 2-inch diameter Schedule 40 PVC riser and factory-slotted screened interval (0.010-inch slots). A silica sand pack was installed in the annular space surrounding the screened interval. The sand pack was brought to a minimum of one foot above the top of the screened interval. A bentonite seal was placed above the sand pack in the well. The well was completed with a flush-mounted road box set in concrete and secured with a compression cap.

B. Discussion of Groundwater Flow Direction and Gradient

The six wells were located in azimuth and elevation for inclusion on the Site Map presented in Appendix A. The top of PVC casing in MW1 was assigned an arbitrary elevation of 100.00 feet. The locations of the current Middlebury Exxon station building and other prominent site features were surveyed for inclusion on this Site Map.

Prior to groundwater sampling on February 20, 1998, all six on-site monitoring wells were monitored for presence of free floating product and depths to water. Results are tabulated as Liquid Level Monitoring Data in Appendix C. No free-phase product was noted in the wells on February 20, 1998. For each well, the measured depth to water was subtracted from the surveyed elevation of the measurement reference point to determine the water table elevation. Water table elevations were plotted on the site map to generate the Groundwater Elevation Map presented in Appendix A.

Based on published data and the data obtained from the installation of MW6, the native soils in the area are primarily clay and silt. The fill installed around USTs is typically sand or pea gravel, as observed in the photographs in the UST closure report dated July 25, 1997. MW4 and MW5 may partially or fully penetrate these more permeable sediments. This variation in permeability is likely to influence the observed differences in groundwater elevation. The depth to water in MW6 is anomalously deeper relative to the depths to water in the other on-site wells. Based on observations made during the installation of MW6, the water level in this well recovers slowly due to the low permeability of the native clay soils, and therefore may have still been recovering on February 20, 1998. On April 17, 1998, all six on-site monitoring wells were re-monitored for presence of free floating product and depths to water to confirm these data. There was a consistent increase of approximately 2 feet in the elevation of the water table in the on-site wells MW1 through MW5 from those water table elevations measured on February 20, 1998.

The elevation of the water table in MW6 increased by approximately 3 feet. These groundwater elevations are essentially consistent with the groundwater elevations observed on February 20, 1998. Based on these data, there is an apparent northwest-trending groundwater divide trending between MW3 and MW5. However, due to the apparent delayed recovery response in MW6 and the potentially highly variable permeability in on-site soils, these data should be confirmed with on-going monitoring. Due to the apparent groundwater elevation anomaly, these groundwater data were not contoured.

The depths of the previously existing monitoring wells were estimated by the Griffin technician during groundwater sampling on February 20, 1998. The approximate depths of MW1 through MW5 are as follows: MW1, 15 feet below grade; MW2, 16 feet below grade; MW3, 10 feet below grade; MW4, 15 feet below grade; MW5, 15 feet below grade. The wells are constructed of 2" PVC as observed by Griffin personnel during the installation of MW6 and groundwater sampling. No other information regarding the construction of these wells was available at the time this report was submitted.

C. Groundwater Sampling and Analyses

A groundwater sample was collected from each of the six on-site monitoring wells, using disposable bailers, on February 20, 1998. Groundwater samples were analyzed by EPA Method 602 by Endyne, Inc., laboratory of Williston, Vermont, for the petroleum-related constituents including benzene, toluene, ethylbenzene, and xylenes (BTEX) and methyl tertiary butyl ether (MTBE). Quality control (QC) samples (a trip blank and duplicate sample) were also collected. A sample was also collected from MW6 for analysis by Modified EPA Method 8100 for total petroleum hydrocarbons (TPH). Analytical results are summarized in tabular form in Appendix D. The Vermont Groundwater Enforcement Standards (VGES) for these compounds are provided for reference in this summary table. Appendix D also contains the analytical laboratory reports. Analytical results of the trip blank and duplicate sample indicate that adequate Quality Assurance/ Quality Control was maintained throughout sample collection and analyses.

The concentrations of benzene detected in MW2, MW3, MW4, and MW5 were above the VGES for this compound. The concentrations of MTBE detected in MW3, MW4, and MW5 were above the VGES for this compound. The concentration of ethylbenzene detected in MW4 was above the VGES for this compound. Total BTEX and MTBE constituent concentrations detected in the monitoring wells were plotted on the site map to generate the Contaminant Distribution Map contained in Appendix A.

IV. EVALUATION OF POTENTIALLY SENSITIVE RECEPTORS

The following potential sensitive receptors in the vicinity of the former Middlebury Exxon site were identified:

- the existing Middlebury Exxon station building,
- the Otter Creek, located approximately 500 feet west of the Middlebury Exxon site,
- the buildings east of the site and across Route 7,
- the buildings west of the site.

Risks of vapor impact to the existing Middlebury Exxon station building were determined to be minimal because the building has no basement and the depth to groundwater in the vicinity of the building is at least 7 feet below grade. No impacts due to the presence of vapors in the buildings either across Route 7 or west of the site have been reported to date. Given the significant distance from the site to the Otter Creek, the current risks posed to this surface water body are likely to be minimal.

V. CONCLUSIONS

Based upon the results of the above investigative tasks, Griffin presents the following conclusions:

- 1) Based on the available data and the laboratory analytical results from this investigation, it appears likely that the contamination at the site is the result of leakage from the galvanized steel piping, formerly used for gasoline distribution at the site, and since replaced. Based on the available data, there is apparently minimal contamination associated with the 550-gallon fuel oil UST that was removed from the site on July 23, 1997.
- 2) One monitoring well (MW6) was installed to approximately 15 feet below grade on February 12, 1998. MW1 through MW5 were previously installed to depths ranging from 10 feet to 16 feet below grade, based on estimates obtained during groundwater sampling on February 20, 1998.
- 3) Groundwater was encountered at depths ranging from 2.8 to 11.9 feet below grade on February 20, 1998. This groundwater elevation pattern was confirmed by depth to water measurements obtained from the six on-site wells on April 17, 1998. The observed groundwater elevations are likely to be due to the variation in permeability in native soils and the backfill around the USTs and the low observed recovery in MW6. An apparent northwest-trending groundwater divide on the site is located on the line between MW3 and MW5.
- 4) No free phase product was detected at this site on February 20, 1998.

- 5) Dissolved petroleum-related compounds were detected at elevated levels in four of the six on-site wells; the concentration of select BTEX and/or MTBE compounds in MW2, MW3, MW4, and MW5 exceeded the VGES for these compounds. It is expected that dissolved petroleum constituent concentrations will decrease over time with the progressive action of natural mitigative processes, including biodegradation, dispersion, and dilution.
- 6) Risks posed to potentially sensitive receptors in the vicinity of the former Middlebury Exxon building appear minimal, based on currently available data.
- 7) Based on the available data, it is unlikely that significant groundwater contamination is migrating off-site.

VI. RECOMMENDATIONS

Based upon the above conclusions, Griffin recommends the following additional work. To track migration of subsurface petroleum constituents at the site and document expected reductions in constituent concentrations, groundwater in the from the five original wells (MW1 through MW5) should be sampled and analyzed on a quarterly basis for one year. Samples should be analyzed by EPA Method 602 for presence of BTEX and MTBE constituents. To confirm the groundwater elevation pattern, the six on-site monitoring wells should be gauged for depth to water concurrently with quarterly groundwater sampling.

The soil stockpile at the site should be screened for VOCs annually, in accordance with the Work Plan, with a properly calibrated PID. When residual contamination, as detected with a PID, is 1 ppm or less, the VTDEC will be petitioned for permission to cease stockpile monitoring and to spread the soils. The plastic covering should be routinely inspected and maintained. It may be necessary to re-pile the soil on a new liner every 12 months depending on the condition of the liner. This will also aid in the more efficient reduction of contaminants in the pile by adding oxygen to the soil.

Recommendations for any additional work that is warranted will be made depending on the results of the four rounds of sampling and the soil screening.

VII. REFERENCES

1. Doll, Charles G., D.P. Stewart, and P. MacClintock, eds., 1970, *Surficial Geologic Map of Vermont*, State of Vermont.
2. Doll, Charles G., W.M. Cady, J. B. Thompson, Jr., and M.P. Billings eds., 1961, *Centennial Geologic Map of Vermont*, State of Vermont.
3. Griffin International, July 25, 1997, Report on UST Closure Inspection at Middlebury Exxon, Middlebury, Vermont, UST Facility 1693.
4. Personal Communication, Matt Pollock, Midway Oil Company, April 9, 1998, regarding construction details and purpose of the 5 existing on-site monitoring wells at Middlebury Exxon.

APPENDIX A

Site Maps



JOB #: 119741156

SOURCE: USGS- MIDDLEBURY, VERMONT QUADRANGLE



MIDDLEBURY EXXON

MIDDLEBURY, VERMONT

SITE LOCATION MAP

DATE: 3/30/98

DWG.#:1

SCALE: 1:24000

DRN.:SB

APP.:CW



FORMER LOCATION OF 550
GALLON FUEL OIL UST

EXISTING LOCATION OF
(2) 8,000 GALLON UST's

LOCATION OF APPROX.
6 CUBIC YARDS OF
STOCKPILED SOILS



MW6



MW5



MIDDLEBURY
EXXON

MW4



MW3



MW2



MW1



GUARD RAIL

EXISTING LOCATION OF
2,000 GALLON UST.

ROUTE 7/COURT STREET

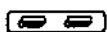
LEGEND



MONITORING WELL



CONCRETE UST PADS



PUMP ISLAND

JOB #: 119741158



MIDDLEBURY EXXON

MIDDLEBURY, VERMONT

SITE MAP

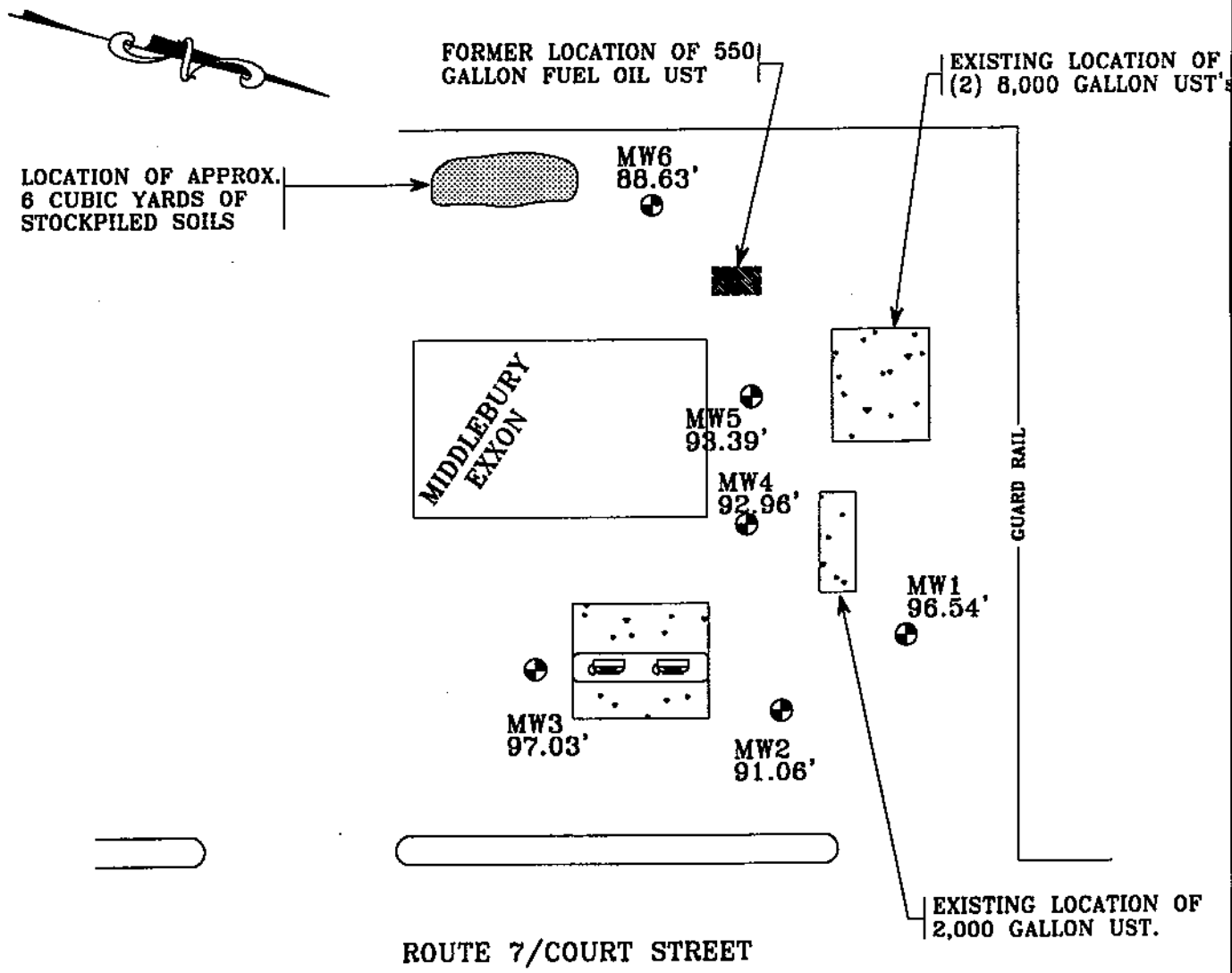
DATE: 3/30/98

DWG.#:2

SCALE: 1"=30'

DRN.:SB

APP.:TK



LEGEND

● MW2 91.06' MONITORING WELL AND WATER TABLE ELEVATION IN FEET

□ CONCRETE UST PADS

▭ PUMP ISLAND

JOB #: 119741158



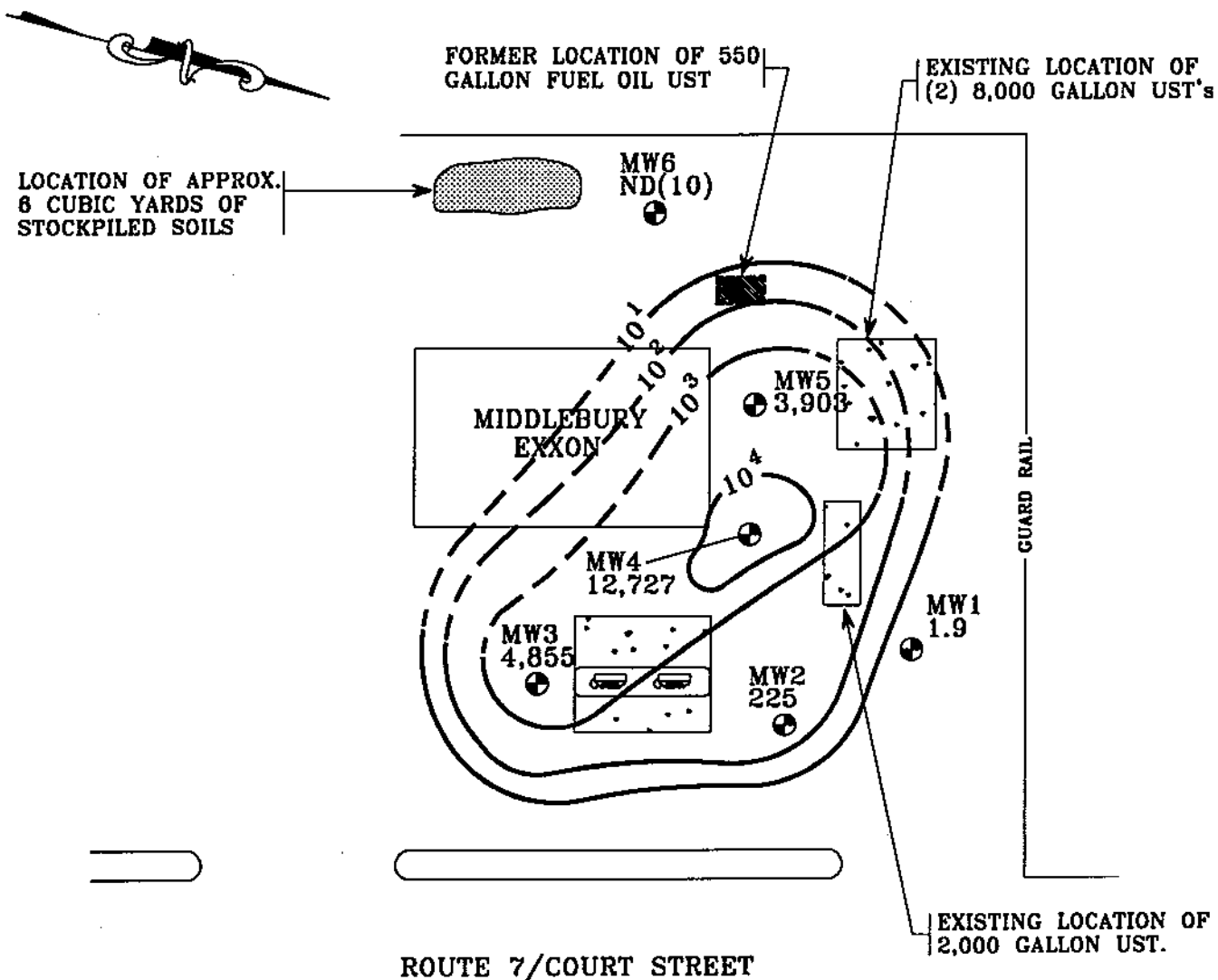
MIDDLEBURY EXXON

MIDDLEBURY, VERMONT

GROUNDWATER ELEVATION MAP

MEASUREMENT DATE: 2/20/98

DATE: 4/10/98	DWG.#:3	SCALE: 1"=30'	DRN.:SB	APP.:TK
---------------	---------	---------------	---------	---------



LEGEND

- MW2 225** MONITORING WELL AND TOTAL BTEX AND MTBE CONCENTRATION (ppb)
- 10¹** ISOCONCENTRATION CONTOUR, TOTAL BTEX AND MTBE (ppb), (DASHED WHERE INFERRED)
- ND** NONE DETECTED
- CONCRETE UST PADS**
- PUMP ISLAND**

JOB #: 119741158



MIDDLEBURY EXXON

MIDDLEBURY, VERMONT

CONTAMINANT DISTRIBUTION MAP

SAMPLE DATE: 2/20/98

DATE: 4/10/98

DWG.#:4

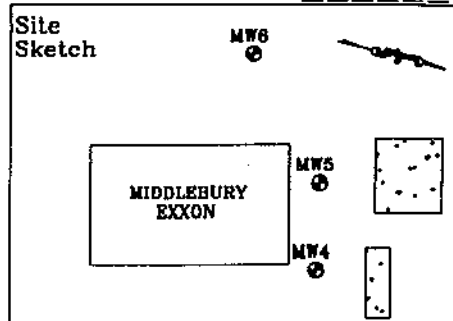
SCALE: 1"=30'

DRN.:SB

APP.:TK

APPENDIX B

Monitoring Well Log

PROJECT MIDDLEBURY EXXONLOCATION MIDDLEBURY, VERMONTDATE DRILLED 2/12/98 TOTAL DEPTH OF HOLE 17.0'DIAMETER 4.25"SCREEN DIA. 2" LENGTH 10.0' SLOT SIZE 0.010"CASING DIA. 2" LENGTH 4.5' TYPE sch 40 pvcDRILLING CO. T&K DRILLING METHOD HSADRILLER ALAN TOMMILA LOG BY C. WARDWELL NUMBER MW6

GRIFFIN INTERNATIONAL, INC

DEPTH IN FEET	WELL CONSTRUCTION	NOTES	BLOWS PER 6" OF SPOON & PID READINGS	DESCRIPTION/SOIL CLASSIFICATION (COLOR, TEXTURE, STRUCTURES)	DEPTH IN FEET
0		ROAD BOX			0
1		LOCKING WELL CAP			1
2		CONCRETE	0'-2' 0.1 ppm	Dark brown to black CLAY and gravel size asphalt pieces, trace sand, sticky.	2
3		NATIVE BACKFILL			3
4		BENTONITE			4
5		WELL RISER			5
6			5'-7'- 7/8/10/11 0 ppm	Brown/gray CLAY, stiff, very thin layers when broken.	6
7					7
8					8
9		SAND PACK			9
10					10
11		WELL SCREEN	10'-12'- 3/5/5/7 0.2 ppm	Brown/gray CLAY, stiff to slightly plastic, wet.	11
12					12
13					13
14		BOTTOM CAP			14
15			15'-17'- 1/2/4/7 0.2 ppm	Brown/gray CLAY, trace sand, slightly plastic, wet.	15
16				Gray/brown CLAY, little sand, trace gravel, plastic, wet.	16
17		UNDISTURBED NATIVE SOIL		BASE OF WELL AT 15' END OF EXPLORATION AT 17'	17
18					18
19					19
20					20
21					21
22					22
23					23
24					24
25					25

APPENDIX C

Liquid Level Data

Liquid Level Monitoring Data, Middlebury Exxon
Middlebury, VT

Monitoring Date: 2-20-98

Well I.D.	Top of Casing Elevation	Depth to Product	Depth to Water	Product Thickness	Water Table Elevation
MW-1	100.00	-	3.46	-	96.54
MW-2	99.59	-	8.53	-	91.06
MW-3	99.83	-	2.80	-	97.03
MW-4	100.32	-	7.36	-	92.96
MW-5	100.55	-	7.16	-	93.39
MW-6	100.53	-	11.90	-	88.63

Monitoring Date: 4-17-98

Well I.D.	Top of Casing Elevation	Depth to Product	Depth to Water	Product Thickness	Water Table Elevation
MW-1	100.00	-	1.36	-	98.64
MW-2	99.59	-	7.77	-	91.82
MW-3	99.83	-	0.91	-	98.92
MW-4	100.32	-	5.33	-	94.99
MW-5	100.55	-	5.16	-	95.39
MW-6	100.53	-	8.91	-	91.62

Note: All values reported in feet.
 NM = Not Measured

Handwritten notes:
 2
 2
 3

APPENDIX D

Groundwater Quality Data, February 20, 1998

Summary of Groundwater Quality Data, Middlebury Exxon
Middlebury, VT

PARAMETER	2-20-98						VGES
	MW1	MW2	MW3	MW4	MW5	MW6	
Benzene	ND(1)	81.9	101	1,730	634	ND(1)	5
Chlorobenzene	ND(1)	ND(2)	ND(20)	ND(50)	ND(50)	ND(1)	100
1,2-DCB	ND(1)	ND(2)	ND(20)	ND(50)	ND(50)	ND(1)	600
1,3-DCB	ND(1)	ND(2)	ND(20)	ND(50)	ND(50)	ND(1)	600
1,4-DCB	ND(1)	ND(2)	ND(20)	ND(50)	ND(50)	ND(1)	75
Ethylbenzene	1.9	40.2	147	1,480	346	ND(1)	700
Toluene	ND(1)	29.6	104	605	TBQ(50)	ND(1)	1000
Xylenes	TBQ(1)	73.3	4,020.0	8,310	833	ND(1)	10000
Total BTEX	1.9	225.0	4,372.0	12,125	1,813	ND(1)	-
MTBE	ND(10)	ND(20)	483	602	2,090	ND(10)	40
BTEX+MTBE	1.9	225.0	4,855.0	12,727	3,903	ND(10)	-
TPH(mg/l)	NA	NA	NA	NA	NA	ND(0.4)	-

All values reported in ug/L (ppb) except as noted

Detections are Bold

VGES - Vermont Groundwater Enforcement Standard, Source VT Groundwater Protection Rule and Strategy, 11/15/97

Values greater than the applicable VGES are shaded

NA - Not Analyzed

ND(10) - Not Detected (Detection Limit)

TBQ(1) - Trace Below Quantitation Limit (Quantitation Limit)



ENDYNE, INC.

119741156

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

REPORT OF LABORATORY ANALYSIS

CLIENT: Griffin International
PROJECT NAME: Middlebury Exxon
REPORT DATE: February 27, 1998
DATE SAMPLED: February 20, 1998

PROJECT CODE: GIME1506
REF.#: 116,940 - 116,947

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody. Chain of custody indicated sample preservation with HCl. However, sample 116946 was found to have a pH of 4.

All samples were prepared and analyzed by requirements outlined in the referenced method and within the specified holding times. All instrumentation was calibrated with the appropriate frequency and verified by the requirements outlined in the referenced method. Blank contamination was not observed at levels affecting the analytical results.

Analytical method precision and accuracy was monitored by laboratory control standards which included matrix spike, duplicate and quality control analyses. These standards were determined to be within established laboratory method acceptance limits.

Individual sample performance was monitored by the addition of surrogate analytes to each sample. All surrogate recovery data was determined to be within laboratory QA/QC guidelines unless otherwise noted.

Reviewed by,

Harry B. Locker, Ph.D.
Laboratory Director

enclosures

**ENDYNE, INC.****Laboratory Services**

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

EPA METHOD 602--PURGEABLE AROMATICS**CLIENT:** Griffin International**DATE RECEIVED:** February 23, 1998**PROJECT NAME:** Middlebury Exxon**REPORT DATE:** February 27, 1998**CLIENT PROJ. #:** 119741156**PROJECT CODE:** GIME1506

Ref. #:	116,940	116,941	116,942	116,943	116,944
Site:	Trip Blank	MW#3	Duplicate	MW#6	MW#2
Date Sampled:	2/20/98	2/20/98	2/20/98	2/20/98	2/20/98
Time Sampled:	7:23	12:58	12:58	13:10	13:30
Sampler:	D. Tourangeau	D. Tourangeau	D. Tourangeau	D. Tourangeau	D. Tourangeau
Date Analyzed:	2/25/98	2/25/98	2/25/98	2/25/98	2/25/98
UIP Count:	0	>10	>10	0	>10
Dil. Factor (%):	100	5	5	100	50
Surr % Rec. (%):	97	96	93	95	94
Parameter	Conc. (ug/L)	Conc. (ug/L)	Conc. (ug/L)	Conc. (ug/L)	Conc. (ug/L)
Benzene	<1	101.	101.	<1	81.9
Chlorobenzene	<1	<20	<20	<1	<2
1,2-Dichlorobenzene	<1	<20	<20	<1	<2
1,3-Dichlorobenzene	<1	<20	<20	<1	<2
1,4-Dichlorobenzene	<1	<20	<20	<1	<2
Ethylbenzene	<1	147.	140.	<1	40.2
Toluene	<1	104.	103.	<1	29.6
Xylenes	<1	4,020.	3,790.	<1	73.3
MTBE	<10	483.	486.	<10	<20

Ref. #:	116,945	116,946	116,947		
Site:	MW#1	MW#4	MW#5		
Date Sampled:	2/20/98	2/20/98	2/20/98		
Time Sampled:	13:44	13:58	14:12		
Sampler:	D. Tourangeau	D. Tourangeau	D. Tourangeau		
Date Analyzed:	2/25/98	2/26/98	2/26/98		
UIP Count:	>10	>10	>10		
Dil. Factor (%):	100	2	2		
Surr % Rec. (%):	95	82	87		
Parameter	Conc. (ug/L)	Conc. (ug/L)	Conc. (ug/L)		
Benzene	<1	1,730.	634.		
Chlorobenzene	<1	<50	<50		
1,2-Dichlorobenzene	<1	<50	<50		
1,3-Dichlorobenzene	<1	<50	<50		
1,4-Dichlorobenzene	<1	<50	<50		
Ethylbenzene	1.9	1,480.	346.		
Toluene	<1	605.	TBQ <50		
Xylenes	TBQ <1	8,310.	833.		
MTBE	<10	602.	2,090.		

Note: UIP = Unidentified Peaks TBQ = Trace Below Quantitation NI = Not Indicated



11974.1156

CHAIN-OF-CUSTODY RECORD

116,940 - 116,948

Project Name: Middlebury Exxon
Site Location: Middlebury

Reporting Address: GRIFFIN
Company: C
Contact Name/Phone #: TIM KELLY

Billing Address: GRIFFIN

Sampler Name:

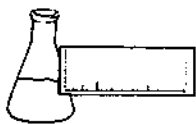
Phone #: DON TURNER/BEAL

[illegible]

Relinquished by: Signature <i>[Signature]</i>	Received by: Signature <i>[Signature]</i>	Date/Time <i>2/23</i>
Relinquished by: Signature <i>[Signature]</i>	Received by: Signature <i>[Signature]</i>	Date/Time <i>2/23/98</i> <i>10:45</i>

Requested Analyses

[illegible]



ENDYNE, INC.

Laboratory Services

32 James Brown Drive
Williston, Vermont 05495
(802) 879-4333
FAX 879-7103

REPORT OF LABORATORY ANALYSIS

CLIENT: Griffin International
PROJECT NAME: Middlebury Exxon/#119741156
DATE REPORTED: February 25, 1998
DATE SAMPLED: February 20, 1998

PROJECT CODE: GIME1507
REF. #: 116,948

Enclosed please find the results of the analyses performed for the samples referenced on the attached chain of custody record.

Chain of custody indicated sample preservation with HCl.

All samples were prepared and analyzed by requirements outlined in the referenced methods and within the specified holding times.

All instrumentation was calibrated with the appropriate frequency and verified by the requirements outlined in the referenced methods.

Blank contamination was not observed at levels affecting the analytical results.

Analytical method precision and accuracy were monitored by laboratory control standards which included matrix spike, duplicate and quality control analyses. These standards were determined to be within established laboratory method acceptance limits.

Reviewed by,

Harry B. Locker, Ph.D.
Laboratory Director

enclosures



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LABORATORY REPORT

TOTAL PETROLEUM HYDROCARBONS (TPH) BY MODIFIED EPA METHOD 8100

DATE: February 25, 1998
CLIENT: Griffin International
PROJECT: Middlebury Exxon/#119741156
PROJECT CODE: GIME1507
COLLECTED BY: Don Tourangeau
DATE SAMPLED: February 20, 1998
DATE RECEIVED: February 23, 1998

Reference #	Sample ID	Concentration (mg/L) ¹
116,948	MW #6; 13:10	ND ²

Notes:

- 1 Values quantitated based on the response of #2 Fuel Oil. Method detection limit is 0.4 mg/L.
- 2 None detected

